

2005-2011 Aquatic Vegetation Summary for Rice Lake Rice Lake National Wildlife Refuge, MN

Rice Lake is a 3,643 acre (1,474 hectares) lake located in the Rice Lake National Wildlife Refuge in Aitkin County, approximately 100 miles due north of Minneapolis, MN. This report summarizes the aquatic vegetation mapped within the lake's shoreline for the years 2005, 2006, 2007, 2008, 2009, and 2011. There is no photography for 2010. The 2005-2008 photos were collected using a 9"x9" analog aerial camera while the 2009 and 2011 photos were collected with a digital aerial camera. Five classes were mapped for Rice Lake and are listed below.

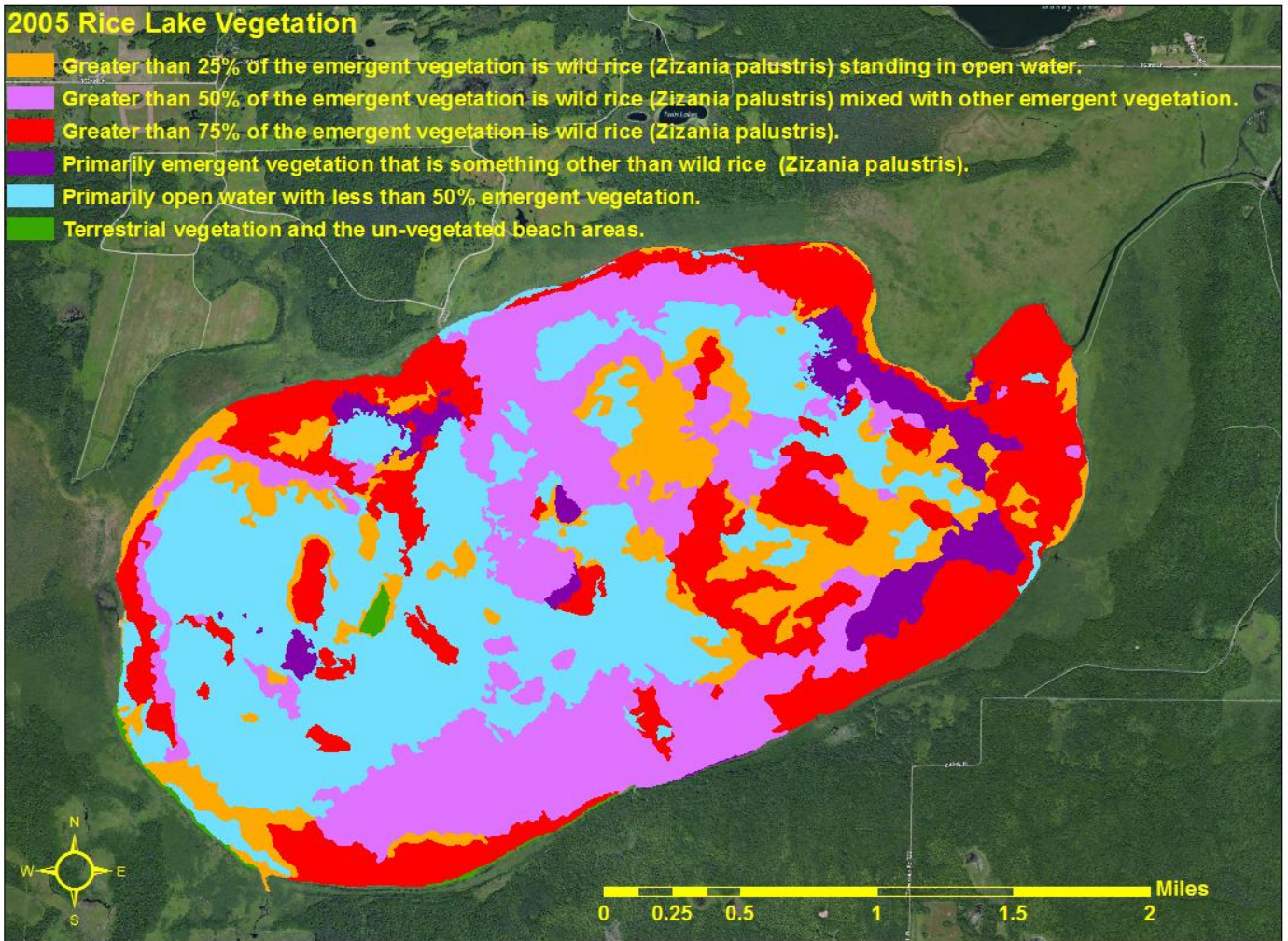
Rice Lake Vegetation Classification System

| VEG_CODE | VEG_CODE_D |
|----------|---|
| EMG | Primarily emergent vegetation that is something other than wild rice (<i>Zizania palustris</i>). |
| NPC | No Photo Coverage |
| OW | Primarily open water with less than 50% emergent vegetation. |
| TERR | Terrestrial vegetation and the un-vegetated beach areas. |
| ZIZD | Greater than 75% of the emergent vegetation is wild rice (<i>Zizania palustris</i>). |
| ZIZME | Greater than 50% of the emergent vegetation is wild rice (<i>Zizania palustris</i>) mixed with other emergent vegetation. |
| ZIZW | Greater than 25% of the emergent vegetation is wild rice (<i>Zizania palustris</i>) standing in open water. |

Rice Lake - 2005

2005 Rice Lake Vegetation

- Greater than 25% of the emergent vegetation is wild rice (*Zizania palustris*) standing in open water.
- Greater than 50% of the emergent vegetation is wild rice (*Zizania palustris*) mixed with other emergent vegetation.
- Greater than 75% of the emergent vegetation is wild rice (*Zizania palustris*).
- Primarily emergent vegetation that is something other than wild rice (*Zizania palustris*).
- Primarily open water with less than 50% emergent vegetation.
- Terrestrial vegetation and the un-vegetated beach areas.



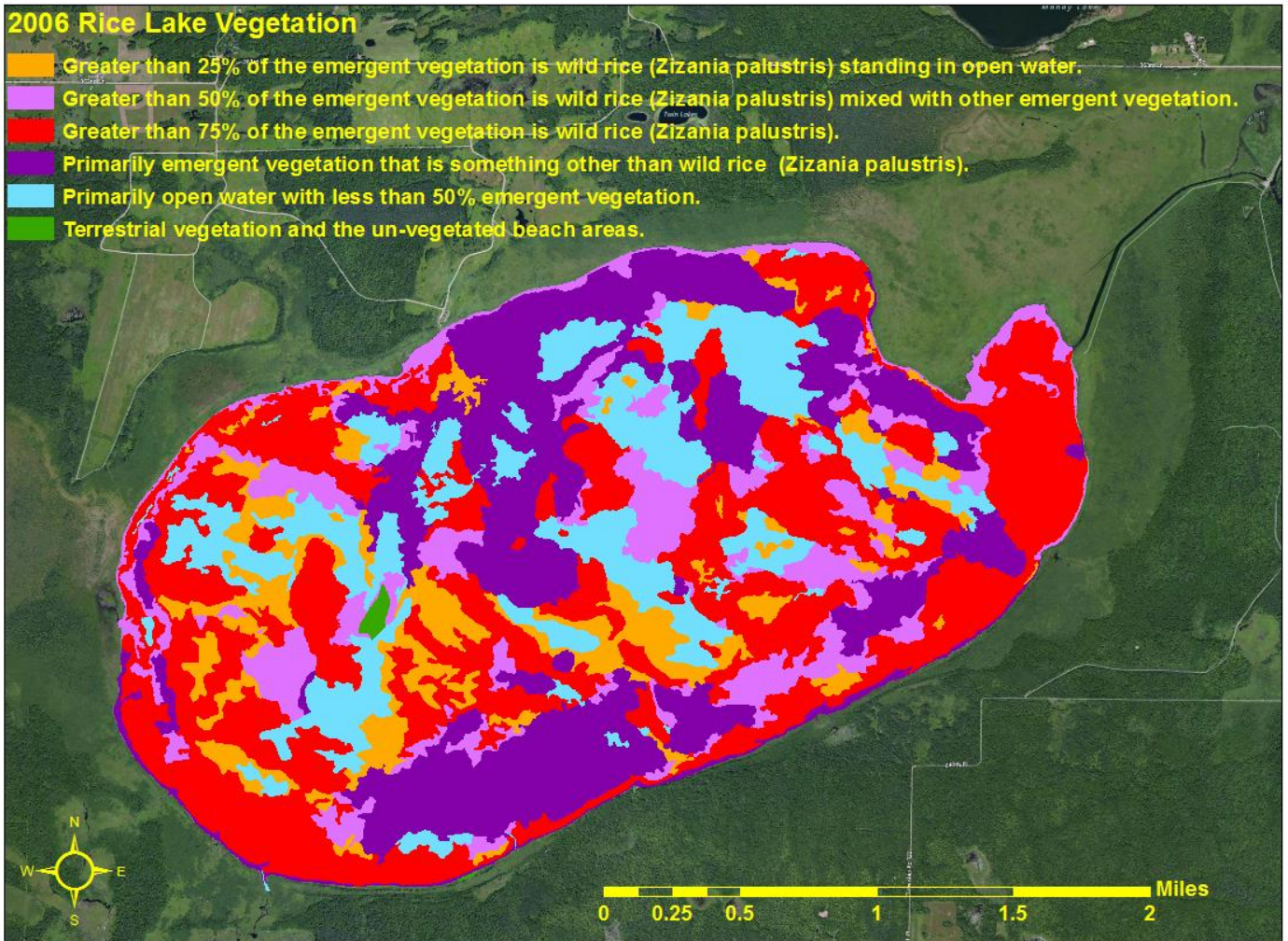
Date of photography: September 10, 2005

| <u>Veg_Code</u> | <u>Count</u> | <u>Acres</u> | <u>% of Tot</u> |
|-----------------|--------------|--------------|-----------------|
| EMG | 12 | 186.8 | 5.1% |
| NPC | 0 | 0.0 | 0.0% |
| OW | 21 | 1204.3 | 33.1% |
| TERR | 6 | 17.7 | 0.5% |
| ZIZD | 24 | 851.8 | 23.4% |
| ZIZME | 21 | 907.2 | 24.9% |
| ZIZW | 36 | 475.0 | 13.0% |
| Totals | 120 | 3642.8 | 100.0% |

Rice Lake - 2006

2006 Rice Lake Vegetation

- Greater than 25% of the emergent vegetation is wild rice (*Zizania palustris*) standing in open water.
- Greater than 50% of the emergent vegetation is wild rice (*Zizania palustris*) mixed with other emergent vegetation.
- Greater than 75% of the emergent vegetation is wild rice (*Zizania palustris*).
- Primarily emergent vegetation that is something other than wild rice (*Zizania palustris*).
- Primarily open water with less than 50% emergent vegetation.
- Terrestrial vegetation and the un-vegetated beach areas.

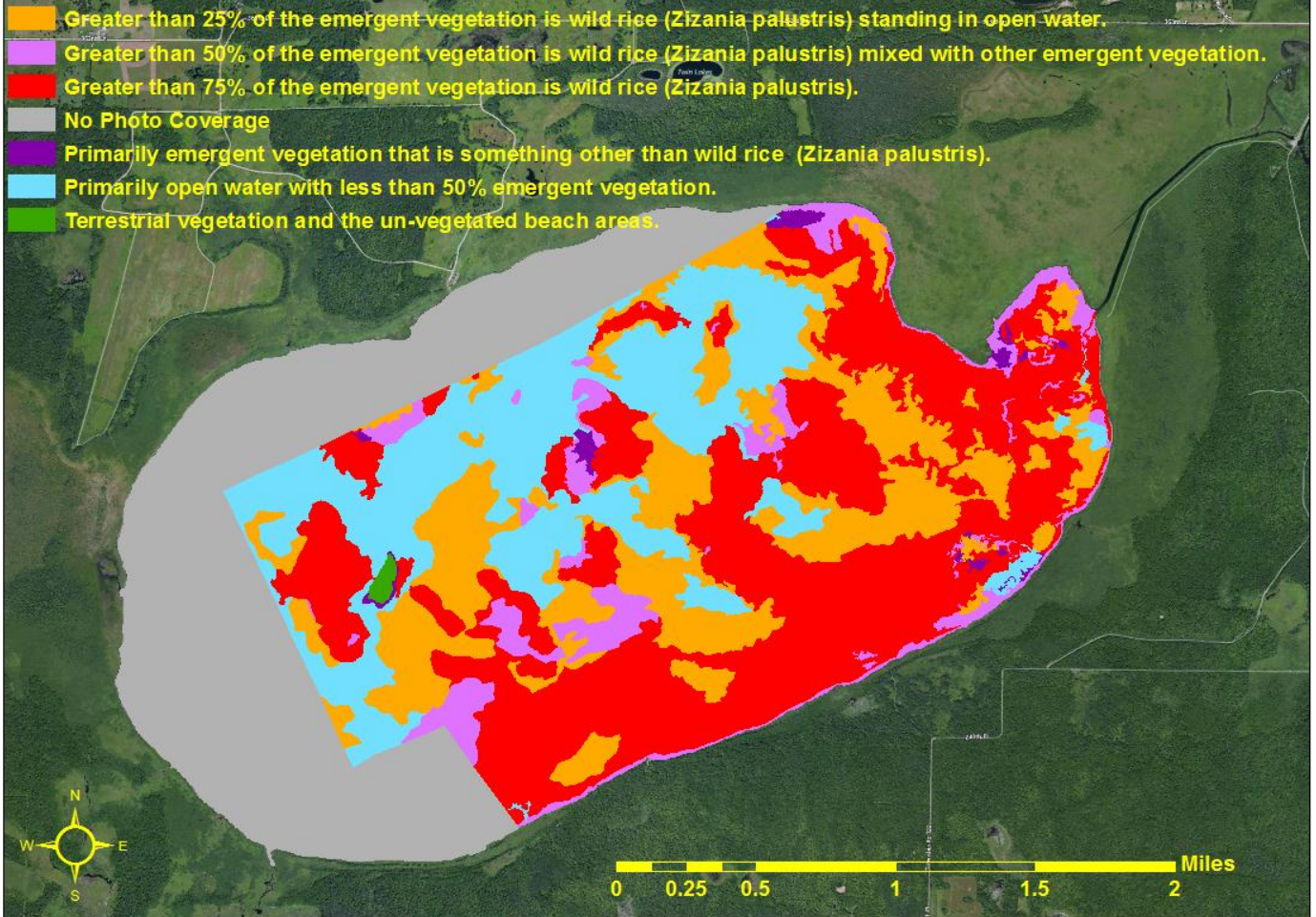


Date of photography: August 22, 2006

| <u>Veg Code</u> | <u>Count</u> | <u>Acres</u> | <u>% of Tot</u> |
|-----------------|--------------|--------------|-----------------|
| EMG | 20 | 929.4 | 25.5% |
| NPC | 0 | 0.0 | 0.0% |
| OW | 34 | 564.5 | 15.5% |
| TERR | 2 | 7.9 | 0.2% |
| ZIZD | 29 | 1325.4 | 36.4% |
| ZIZME | 58 | 467.4 | 12.8% |
| ZIZW | 50 | 348.1 | 9.6% |
| Totals | 193 | 3642.8 | 100.0% |

Rice Lake - 2007

2007 Rice Lake Vegetation



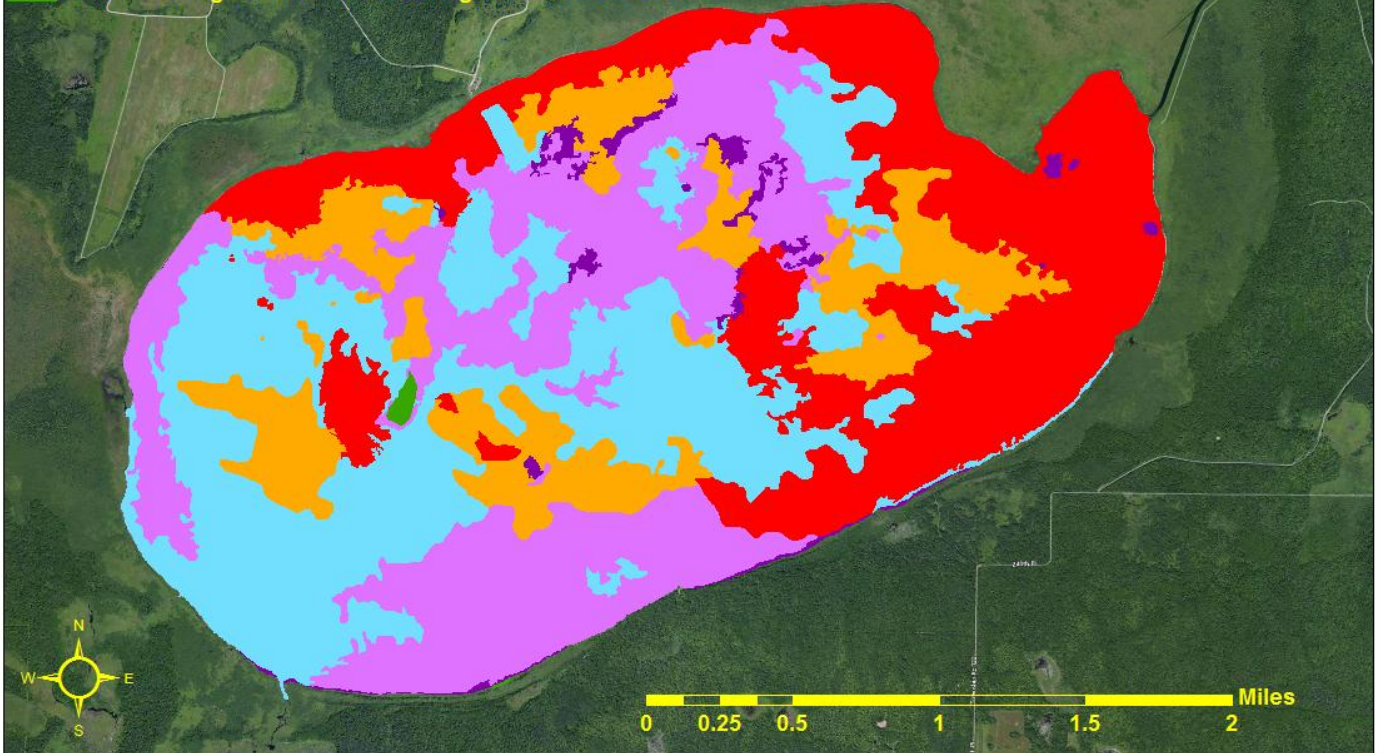
Date of photography: September 28, 2007

| <u>Veg Code</u> | <u>Count</u> | <u>Acres</u> | <u>% of Tot</u> |
|-----------------|--------------|--------------|-----------------|
| EMG | 15 | 23.6 | 0.6% |
| NPC | 1 | 1000.0 | 27.5% |
| OW | 9 | 644.3 | 17.7% |
| TERR | 1 | 6.7 | 0.2% |
| ZIZD | 12 | 1112.1 | 30.5% |
| ZIZME | 37 | 194.4 | 5.3% |
| ZIZW | 30 | 661.7 | 18.2% |
| Totals | 105 | 3642.8 | 100.0% |

Rice Lake - 2008

2008 Rice Lake Vegetation

- Greater than 25% of the emergent vegetation is wild rice (*Zizania palustris*) standing in open water.
- Greater than 50% of the emergent vegetation is wild rice (*Zizania palustris*) mixed with other emergent vegetation.
- Greater than 75% of the emergent vegetation is wild rice (*Zizania palustris*).
- Primarily emergent vegetation that is something other than wild rice (*Zizania palustris*).
- Primarily open water with less than 50% emergent vegetation.
- Terrestrial vegetation and the un-vegetated beach areas.



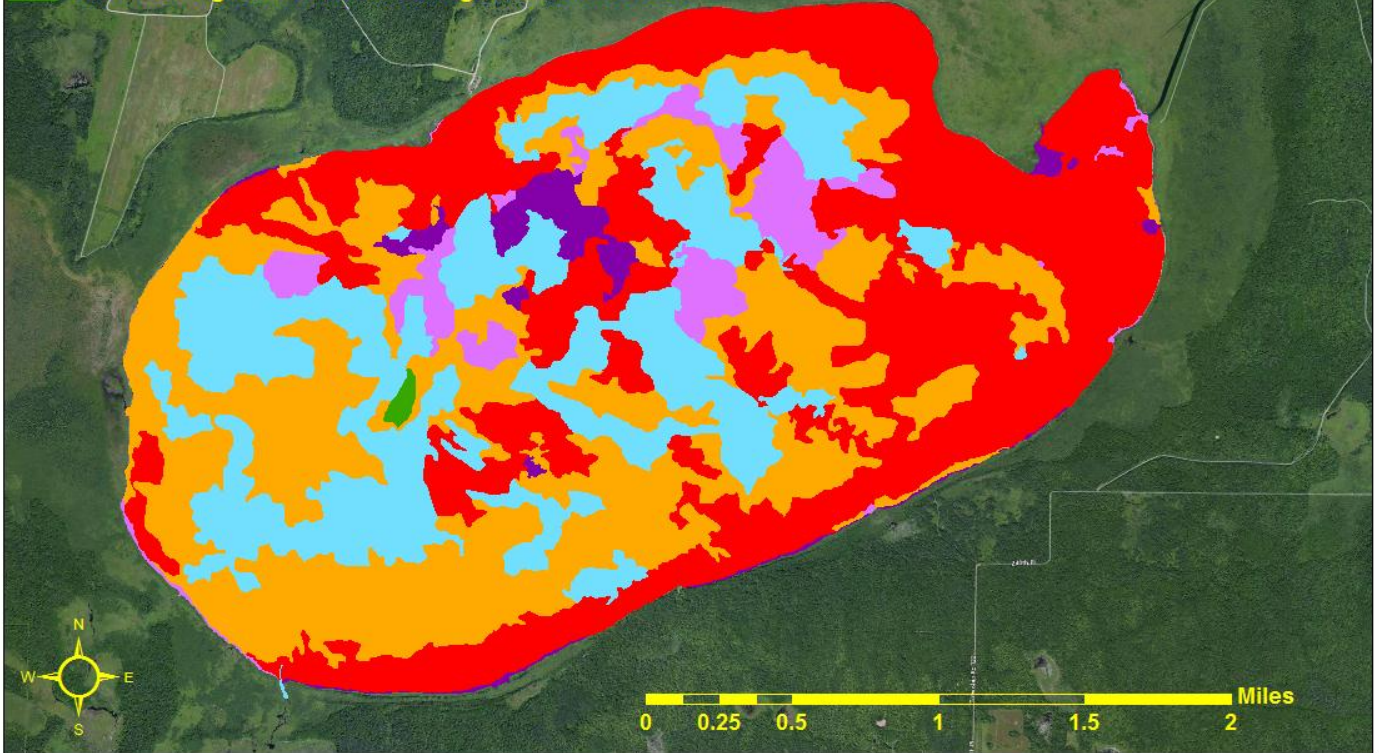
Date of photography: August 29, 2008

| <u>Veg_Code</u> | <u>Count</u> | <u>Acres</u> | <u>% of Tot</u> |
|-----------------|--------------|--------------|-----------------|
| EMG | 27 | 55.1 | 1.5% |
| NPC | 0 | 0.0 | 0.0% |
| OW | 14 | 1080.9 | 29.7% |
| TERR | 2 | 7.0 | 0.2% |
| ZIZD | 7 | 1013.4 | 27.8% |
| ZIZME | 9 | 948.7 | 26.0% |
| ZIZW | 13 | 537.8 | 14.8% |
| Totals | 72 | 3642.8 | 100.0% |

Rice Lake - 2009

2009 Rice Lake Vegetation

- Greater than 25% of the emergent vegetation is wild rice (*Zizania palustris*) standing in open water.
- Greater than 50% of the emergent vegetation is wild rice (*Zizania palustris*) mixed with other emergent vegetation.
- Greater than 75% of the emergent vegetation is wild rice (*Zizania palustris*).
- Primarily emergent vegetation that is something other than wild rice (*Zizania palustris*).
- Primarily open water with less than 50% emergent vegetation.
- Terrestrial vegetation and the un-vegetated beach areas.



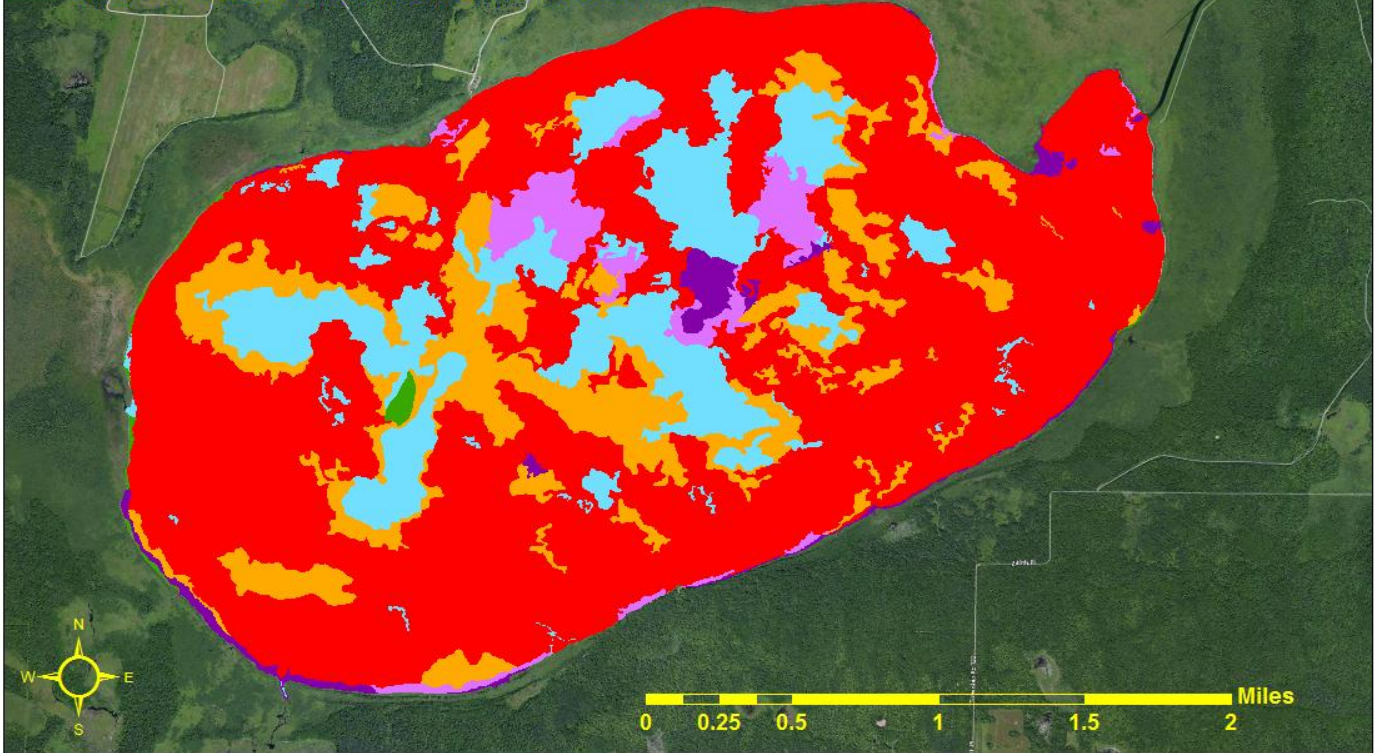
Date of photography: August 18, 2009

| <u>Veg_Code</u> | <u>Count</u> | <u>Acres</u> | <u>% of Tot</u> |
|-----------------|--------------|---------------|-----------------|
| EMG | 12 | 85.5 | 2.3% |
| NPC | 0 | 0.0 | 0.0% |
| OW | 14 | 795.9 | 21.8% |
| TERR | 1 | 7.4 | 0.2% |
| ZIZD | 9 | 1372.2 | 37.7% |
| ZIZME | 17 | 182.2 | 5.0% |
| ZIZW | 20 | 1199.6 | 32.9% |
| Totals | 73 | 3642.8 | 100.0% |

Rice Lake - 2011

2011 Rice Lake Vegetation

- Greater than 25% of the emergent vegetation is wild rice (*Zizania palustris*) standing in open water.
- Greater than 50% of the emergent vegetation is wild rice (*Zizania palustris*) mixed with other emergent vegetation.
- Greater than 75% of the emergent vegetation is wild rice (*Zizania palustris*).
- Primarily emergent vegetation that is something other than wild rice (*Zizania palustris*).
- Primarily open water with less than 50% emergent vegetation.
- Terrestrial vegetation and the un-vegetated beach areas.



Date of photography: August 18, 2011

| <u>Veg Code</u> | <u>Count</u> | <u>Acres</u> | <u>% of Tot</u> |
|-----------------|--------------|--------------|-----------------|
| EMG | 21 | 62.9 | 1.7% |
| NPC | 0 | 0.0 | 0.0% |
| OW | 44 | 502.7 | 13.8% |
| TERR | 7 | 13.2 | 0.4% |
| ZIZD | 3 | 2404.6 | 66.0% |
| ZIZME | 15 | 128.0 | 3.5% |
| ZIZW | 41 | 531.5 | 14.6% |
| Totals | 131 | 3642.8 | 100.0% |